

**Methods and Apparatus for
Improving the Quality of Speech Signals**

ABSTRACT

Methods and apparatus are disclosed to extend the bandwidth of a speech
5 communication to yield a perceived higher quality speech communication for an enhanced
user experience. In one aspect of the invention, for example, methods and apparatus can be
used to extend the bandwidth of a speech communication beyond a band-limited region
defined by the lowest limit and highest limit of the frequency spectrum by which such speech
communication is otherwise characterized absent such bandwidth extension. In another
10 aspect of the invention, for example, methods and apparatus can be used to substitute for
corrupt, missing or lost components of a given speech communication, or to otherwise
enhance the perceived quality of a speech communication, by extending the speech
communication to include one or more artificially created points within the region defined by
the lowest limit and highest limit of the frequency spectrum by which such speech
15 communication is characterized. The result is a speech communication that is perceived to be
of higher quality. The various aspects of the present invention can be applied, for example, to
network devices or to end-terminal devices.